REMARKS

Claim 17 is amended to delete from it an extraneous reference number. Clean copies of the claims follow this amendment, beginning on a separate page.

The Examiner rejected claims 1, 2 and 9-20 under 35 U. S. C. § 103. The Examiner relied upon the combination of Hastings U. S. Patent 4,576,827 (hereinafter Hastings '827) and Dinzen U. S. Patent 5,250,755 (hereinafter Dinzen) to support this rejection.

The Examiner takes the position that Hastings '827 teaches a high voltage cable including a fiber core 200, a first layer 202 of electrically relatively non-insulative polymer, a second layer 204 of an electrically relatively non-conductive polymer, a fourth layer including a metal braid shield, and a fifth layer including a relatively solvent- and abrasion-resistant polymer jacket.

With respect to claim 2, the Examiner takes the position that Hastings '827 teaches that the fiber core 200 includes a stranded fiber polyester core.

With respect to claims 9 and 10, the Examiner takes the position that Hastings '827 teaches that the second layer 204 may include a non-conductive layer of low-density polyethylene.

With respect to claim 17, the Examiner takes the position that Hastings '827 teaches that the metal braid shield includes a metal braid covering between (sic) about 100% of the outside surface of the second layer 204 of electrically relatively insulative polymer.

With respect to claim 18, the Examiner takes the position that Hastings '827 teaches that the fourth layer 206 including a metal braid shield has a pitch.

With respect to claim 19, the Examiner takes the position that Hastings '827 teaches that the polymer jacket 210 includes a flexible polyurethane jacket.

With respect to claim 20, the Examiner takes the position that Hastings '827 teaches the cable in combination with a high-magnitude potential supply, a device for the electrostatically aided atomization and dispensing of a coating material , and a source of the coating material coupled to the device.

The Examiner concedes that Hastings '827 does not teach claim 1's specifically recited third layer of an electrically relatively non-insulative polymer between the second layer of an electrically relatively non-conductive polymer and the fourth layer including a metal braid shield. The Examiner concedes that Hastings '827 does not teach claim 11's specifically recited third layer including a layer of electrically relatively non-insulative polyvinyl chloride. The Examiner concedes that Hastings '827 does not teach claims 12 and 13's specifically recited third layer including a layer of spirally extruded electrically relatively non-insulative polymer. The Examiner concedes that Hastings '827 does not teach claim 14's specifically recited metal braid

shield including a copper-containing braid shield. The Examiner concedes that Hastings '827 does not teach claim 15's specifically recited metal braid shield including a copper- and tin-containing braid shield. The Examiner concedes that Hastings '827 does not teach claim 16's specifically recited metal braid shield including a tin-containing braid shield. The Examiner concedes that Hastings '827 does not teach claim 17's specifically recited metal braid shield includes a metal braid covering between about 85% and about 100% of the outside surface of the third layer of electrically relatively non-insulative polymer. The Examiner concedes that Hastings '827 does not teach claim 18's specifically recited pitch of the braid of the metal braid shield is between about 0° and about 20° to a perpendicular to the longitudinal extent of the cable.

The Examiner relies upon Dinzen to teach a core 1 surrounded by a first layer conductive sleeve 2, a second layer high voltage insulative sleeve surrounding the first layer conductive sleeve 2, a third layer conductive sleeve 4 surrounding the second layer high voltage insulative sleeve 3, a fourth layer of braided wires 5 surrounding the third layer conductive sleeve 4, and an outer casing 6 of PVC surrounding the fourth layer of braided wires 5.

With respect to claims 11 and 12, the Examiner relies upon Dinzen to teach that the third layer of conductive material 4 between the second layer of insulative material 3 and the fourth layer of braided conductive material 5 may be made of a synthetic resin, such as embedded PVC.

With respect to claim 14, the Examiner relies upon Dinzen to teach that the braided shield 5 is made of copper wire.

Hastings '827 teaches a high-voltage cable including: 1) twisted strands 200 of Dacron and Nicalon; 2) a relatively highly resistive extruded layer of 13% carbon-filled polypropylene 202 having a resistivity in the approximate range of 10^7 -10^9 ohm-cm; 3) a dielectric sheath 204 used to insulate the core 200 for high voltage operation; 4) an electrically grounded conductive braid 206; 5) a two-mil thick layer of Mylar brand polyester sheet material 208 wrapped to provide a 50% lap; and, 6) a layer of polyurethane 210.

Dinzen teaches a high-voltage cable including: 1) an inner conductor 1 having a core in the form of a synthetic plastic string and around it a layer of 6 stranding elements each including a core wire and a layer of 6 wires. All 42 wires are steel wires with a thickness of 0.15 mm and they are stranded to form a cord; 2) an inner conducting sleeve 2 of semi-conducting rubber; 3) high voltage insulation 3 of ethylene-propylene rubber (EPR); 4) an outer conducting sleeve 4 of semiconducting rubber; 5) an outer conductor 5 of braided copper wires with 95% covering; and, 6) an outer casing 6 of PVC.

Dinzen also teaches a high-voltage cable including: 1) an inner conductor 1 having a core including a copper wire with a thickness of 0.2 mm, and around it a layer of 6

nickel-iron alloy wires with a thickness of 0.2 mm; 2) an inner conducting sleeve 2 of semi-conducting rubber; 3) high voltage insulation 3 of EPR; 4) an outer conducting sleeve 4 of semiconducting rubber; 5) an outer conductor 5 of braided copper wires with 95% covering; and, 6) an outer casing 6 of PVC.

Dinzen also teaches a high-voltage cable including: 1) a cable core 1' having two bare high voltage conductors 7 of Ni-Fe-alloy wires and two insulated heating conductors 8 of Ni-Fe-alloy wire with a conductor insulation 9 of TEFZEL brand ethylene-tetrafluoroethylene fluoropolymer resin, all stranded together to form a cable core; 2) an inner conducting sleeve 2 of semi-conducting rubber; 3) high voltage insulation 3 of EPR; 4) an outer conductive sleeve 4' of semi-conducting coated band; 5) a screen braid 5 of copper wires; and, 6) an outer casing 6 of PVC.

Dinzen also teaches a high-voltage cable including: 1) a central inner high voltage conductor 1; an inner conducting sleeve 2; 3) high voltage insulation 3; 4) an outer conducting sleeve which can be extruded or band shaped; 5) an outer conductor 5; and, 6) a band 6' arranged under; 7) an outer casing 6.

Finally, Dinzen teaches a high-voltage cable including: 1) an inner conduct having a core provided with two heating conductors 8, 9 and one heat control conductor 15-16; 2) a conducting sleeve 17; and, 3) a concentric high voltage conductor 18.

The problem with the Examiner's position that substituting specific isolated features from Dinzen for specific isolated features of Hastings '827 is that the combination of features of Hastings '827 is different from the combination of features of Dinzen. Each feature of Hastings '827 exists in the combination of Hastings '827 to achieve a unique function in the combination of Hastings '827. Each feature of Dinzen exists in the combination of Dinzen to achieve a unique function in the combination of Dinzen. To argue that replacing the material used in a layer of one with a material used in a different layer of the other, or between two layers found in the other, is less a reliable prediction of the outcome of such an experiment than it is a guess; less evidence of 35 U. S. C. § 103 obviousness and more a matter for speculation. More is required to make out a *prima facie* case of obviousness under 35 U. S. C. § 103 than simply finding the isolated bits and pieces of the claimed arrangement in the prior art.

> When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness. See, e.g., McGinley v. Franklin Sports, Inc., 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001) ("the central question is whether there is reason to combine [the] references," a question of fact drawing on the Graham factors).

"The factual inquiry whether to combine references must be thorough and searching." Id. It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with. See, e.g., Brown & Williamson Tobacco Corp. v. Philip Morris Inc., 229 F.3d 1120, 1124-25, 56 USPQ2d 1456, 1459 (Fed. Cir. 2000) ("a showing of a suggestion, teaching, or motivation to combine the prior art references is an 'essential component of an obviousness holding'") (quoting C.R. Bard, Inc., v. M3 Systems, Inc., 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998)); In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) ("Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."); In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998) (there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant); In re Fine, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988) ("'teachings of references can be combined only if there is some suggestion or incentive to do so.'") (emphasis in original) (quoting ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)).

The need for specificity pervades this authority. See, e.g., In re Kotzab, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) ("particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed"); In re Rouffet, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998) ("even when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious."); In re Fritch, 972 F.2d 1260, 1265, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992) (the examiner can satisfy the burden of showing obviousness of the combination "only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references").

With respect to Lee's application, neither the examiner nor the Board adequately supported the selection and combination of the Nortrup and Thunderchopper references to render obvious that which Lee described. The examiner's conclusory statements that "the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper programming software" and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial" do not adequately address the issue of motivation to combine. This factual question of motivation is material to patentability, and

could not be resolved on subjective belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher." W.L. Gore v. Garlock, Inc., 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983). Thus the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion.

Deferential judicial review under the Administrative Procedure Act does not relieve the agency of its obligation to develop an evidentiary basis for its findings. To the contrary, the Administrative Procedure Act reinforces this obligation. See, e.g., Motor Vehicle Manufacturers Ass'n v. State Farm Mutual Automobile Ins. Co., 463 U.S. 29, 43 (1983) ("the agency must examine the relevant data and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'") (quoting Burlington Truck Lines v. United States, 371 U.S. 156, 168 (1962)); Securities & Exchange Comm'n v. Chenery Corp., 318 U.S. 80, 94 (1943) ("The orderly function of the process of review requires that the grounds upon which the administrative agency acted are clearly disclosed and adequately sustained.").

In its decision on Lee's patent application, the Board rejected the need for "any specific hint or suggestion in a particular reference" to support the combination of the Nortrup and Thunderchopper references. Omission of a relevant factor required by precedent is both legal error and arbitrary agency action. See Motor Vehicle Manufacturers, 463 U.S. at 43 ("an agency rule would be arbitrary and capricious if the agency . . . entirely failed to consider an important aspect of the problem"); Mullins v. Department of Energy, 50 F.3d 990, 992 (Fed. Cir. 1995) ("It is well established that agencies have a duty to provide reviewing courts with a sufficient explanation for their decisions so that those decisions may be judged against the relevant statutory standards, and that failure to provide such an explanation is grounds for striking down the action."). As discussed in National Labor Relations Bd. v. Ashkenazy Property Mgt. Corp., 817 F.2d 74, 75 (9th Cir. 1987), an agency is "not free to refuse to follow circuit precedent."

The foundation of the principle of judicial deference to the rulings of agency tribunals is that the tribunal has specialized knowledge and expertise, such that when reasoned findings are made, a reviewing court may confidently defer to the agency's application of its knowledge in its area of expertise. Reasoned findings are critical to the performance of agency functions and judicial reliance on agency competence. See Baltimore and Ohio R. R. Co. v. Aberdeen & Rockfish R. R. Co., 393 U.S. 87, 91-92 (1968) (absent reasoned findings based on substantial evidence effective review would become lost "in the haze of so-called expertise"). The "common knowledge and common sense" on which the Board relied in rejecting Lee's application are not the specialized knowledge and expertise contemplated by the Administrative Procedure Act. Conclusory statements such as those here provided do not fulfill

> the agency's obligation. This court explained in Zurko, 258 F.3d at 1385, 59 USPQ2d at 1697, that "deficiencies of the cited references cannot be remedied by the Board's general conclusions about what is 'basic knowledge' or 'common sense.'" The Board's findings must extend to all material facts and must be documented on the record, lest the "haze of so-called expertise" acquire insulation from accountability. "Common knowledge and common sense," even if assumed to derive from the agency's expertise, do not substitute for authority when the law requires authority. See Allentown Mack, 522 U.S. at 376 ("Because reasoned decisionmaking demands it, and because the systemic consequences of any other approach are unacceptable, the Board must be required to apply in fact the clearly understood legal standards that it enunciates in principle . . . .")
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> The case on which the Board relies for its departure from precedent, In re Bozek, 416 F.2d 1385, 163 USPQ 545 (CCPA 1969), indeed mentions "common knowledge and common sense," the CCPA stating that the phrase was used by the Solicitor to support the Board's conclusion of obviousness based on evidence in the prior art. Bozek did not hold that common knowledge and common sense are a substitute for evidence, but only that they may be applied to analysis of the evidence. Bozek did not hold that objective analysis, proper authority, and reasoned findings can be omitted from Board decisions. Nor does Bozek, after thirty-two years of isolation, outweigh the dozens of rulings of the Federal Circuit and the Court of Customs and Patent Appeals that determination of patentability must be based on evidence. This court has remarked, in Smiths Industries Medical Systems, Inc. v. Vital Signs, Inc., 183 F.3d 1347, 1356, 51 USPQ2d 1415, 1421 (Fed. Cir. 1999), that Bozek's reference to common knowledge "does not in and of itself make it so" absent evidence of such knowledge.

In re Lee, 61 U. S. P. Q. 2d 1430, 1433-1435, (Fed. Cir. Jan. 18, 2002).

Applicant submits that the combination relied upon by the Examiner does not meet the requirements recognized by In re Lee to make out a *prima facie* case of 35 U. S. C. § 103 obviousness. Accordingly, Applicant submits that the 35 U. S. C. § 103 rejection of claims 1, 2 and 9-20 is overcome.

The Examiner rejected claims 3-8 under 35 U. S. C. § 103. The Examiner relied upon the combination of Hastings '827, Dinzen and Hastings U. S. Patent 4,739,935 (hereinafter Hastings '935) to support this rejection. The Examiner relied upon Hastings '827 and Dinzen as noted above. The Examiner concedes that the Hastings '827/Dinzen combination does not disclose claims 3 and 5's specifically recited impregnating the fiber core to increase its bulk conductivity, nor claims 4 and 6's specifically recited impregnating the fiber core with carbon black.

With respect to claim 3, the Examiner relied upon Hastings '935 to teach that the fiber core 42 is impregnated to increase its bulk conductivity.

With respect to claim 4, the Examiner relied upon Hastings '935 to teach that the fiber core 42 is impregnated with carbon black.

With respect to claim 5, the Examiner relied upon Hastings '935 to teach that the fiber core 42 is impregnated to increase its bulk conductivity.

With respect to claim 6, the Examiner relied upon Hastings '935 to teach that the fiber core 42 is impregnated with carbon black.

With respect to claim 7, the Examiner relied upon Hastings '935 to teach that the first layer 202 includes a layer of semiconductive polyethylene.

With respect to claim 8, the Examiner relied upon Hastings '935 to teach that the first layer 44 includes a layer of semiconductive polyethylene that includes a layer of carbon black-loaded polyethylene.

The Examiner concludes that it would have been obvious to one having ordinary skill in the art of cables at the time the invention was made to modify the cable of Hastings '827/Dinzen to comprise the material configuration as taught by Hastings '935 because, in the Examiner's view, Hastings '935 teaches that such a configuration eliminates the possibility of having corona inducing voids or spaces between the carbon-loaded sheath and the outer dielectric layers, thereby eliminating the possibility of cable failure.

However, again, more is required to make out a *prima facie* case of obviousness under 35 U. S. C. § 103 than simply finding the isolated bits and pieces of the claimed arrangement in the prior art. For the reasons noted above in connection with the discussion of the rejection of claims 1, 2 and 9-20, claims 3-8, all of which depend directly or indirectly from claim 1, are believed patentable.

The Examiner also called to Applicant's attention the following listed references: U. S. Patent 4,499,438; U. S. Patent 4,584,431; and, published Japanese patent application 10-289,778. Applicant has considered these references and believes his claims to be patentable over these references.

Accordingly, Applicant submits that his claims 1-20, as amended herein, are in condition for allowance. Such action is respectfully requested.

Please charge any fees which may be necessary to constitute this a timely response to the March 12, 2003 official action, or credit any overpayment, to Applicant's undersigned counsel's deposit account 10-0435 with reference to our file 3030-69081. A duplicate copy of this authorization is enclosed. Accordingly, Applicant submits that this application is in condition for favorable consideration, culminating in allowance. Such action is respectfully requested.

Respectfully submitted,

Richard D. Conard
Attorney Reg. No. 27321
Attorney for Applicant

RDC/kat
Indianapolis, Indiana
(317)231-7285
INDS02 RDC 579772